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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,631	04/27/2001	Wendong Zhen	925-192	8827

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NIXON & VANDERHYE, PC
1100 N GLEBE ROAD
8TH FLOOR
ARLINGTON, VA 22201-4714

EXAMINER

DIAZ, JOSE R

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/842,631

Applicant(s)

ZHEN, WENDONG

Examiner

José R Díaz

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23,24,28 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30,33 and 35 is/are allowed.
- 6) ☒ Claim(s) 23,24,28, 32, 34 and 36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

➤ A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 13, 2003 has been entered.

Claim Rejections - 35 USC § 112

➤ Claims 28, 32, 34 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 28 and 32 recite the limitation of "higher than those of the other layers". It is not clear what and how many layers are defined by the phrase "other layers." Does "other layers" include only the three intermediate layers or include the three intermediate layers and the uppermost layer? Clarification is required.

➤ Claims 34 and 36 are rejected due to their dependency on claim 32.

Claim Rejections - 35 USC § 102

➤ The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

➤ Claims 23-24 and 28 rejected under 35 U.S.C. 102(b) as being anticipated by Ogata et al. (JP 10-321809).

Regarding claims 23-24 and 28, Ogata et al. teach a lower electrode (4), a ferroelectric thin film constructed of at least three layers (6, 8) including a lowermost layer (6), an intermediate layer (8), and an uppermost layer (consider the smaller grains formed between the electrode (9) and the intermediate layer (8)); and an upper electrode (9) (see Figure 1(d)). In addition, Ogata et al. teach that a crystal grain of the lowermost layer (6) and/or the uppermost layer is smaller than a crystal grain of the intermediate layer (8) (see Fig. 1(d)). Further, Ogata et al. teach that the crystalline nucleus density of the lowermost layer (6) is higher than those of the other layers (8) (see Fig. 1(d)).

Allowable Subject Matter

➤ Claims 30-31, 33 and 35 are allowed.

➤ Claims 32, 34 and 36 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach a ferroelectric thin film constructed of five layers including a lowermost layer, three intermediate layers, and an uppermost layer; wherein the crystal grains of the lowermost layer and/or uppermost layer is smaller than the crystal grains of the three intermediate layers.

Further, the prior art fails to teach a ferroelectric thin film constructed of five layers including a lowermost layer, three intermediate layers, and an uppermost layer; wherein the crystalline nucleus density of the lowermost layer is higher than the three intermediate layers.

Response to Arguments

➤ Applicant's arguments filed February 13, 2003 have been fully considered but they are not persuasive. Applicant argues that the reference Ogata et al. does not teach the limitation of "an upper electrode directly laminated, on one side, to said uppermost electrode" (emphasis added). However, the Examiner disagrees. Please note that the term "laminated" does not limit the invention to only be in contact with the uppermost layer, as now argued by Applicant. As a matter of fact, the term laminated does not preclude other possibilities such as the one shown in Figure 1(d) of Ogata et al., in which the uppermost electrode contacts both the uppermost layer and the intermediate layer. Therefore, the rejection is considered to be proper since the reference Ogata et al. anticipates the claimed limitation.

Conclusion

➤ The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are related to the present invention: Figures 1 and 7 of Shimada et al. (US Pat. No. 6,033, 920); Figures 1(a)-(d) of Matsuda et al. (US Pat. No. 6,143,597); Figures 5-6 of Haushalter (US Pat. No. 5,736,759); and Figures 4-5 and 7 of Suzuki (US Pat. No. 6,151,240).

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Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R Díaz whose telephone number is (703) 308-6078. The examiner can normally be reached on 9:00-5:00 Monday, Tuesday, Thursday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 746-3891 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JRD
March 21, 2003



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800